# PLAN OF COOPERATION FOR 2016 ANCHOR RETRIEVAL PROGRAM CHUKCHI AND BEAUFORT SEAS ALASKA

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February 2016 Revised April 2016

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#### ACRONYMS AND ABBREVIATIONS

4MP Marine Mammal Monitoring and Mitigation Plan

AEWC Alaska Eskimo Whaling Commission
AHTSV Anchor Handling Towing Supply Vessels

CAA Conflict Avoidance Agreement CFR Code of Federal Regulations

Com Center North Slope Communications Centers dB re 1 µPa decibels referenced to one microPascal

EZ Exclusion Zone

ft feet

FWS Fairweather Science LLC

FWX Fairweather LLC

GPS Global Positioning System

IHA Incidental Harassment Authorizations

km kilometers

LOA Letter of Authorization

m meters mi miles

MMPA Marine Mammal Protection Act

MODIS Moderate Resolution Imaging Spectroradiometer

MODU Mobile offshore drilling unit NMFS National Marine Fisheries Service

NOAA National Oceanic and Atmospheric Administration

NSB North Slope Borough
OSC Outer Continental Shelf
OSRV Oil spill response vessel
POC Plan of Cooperation

PSO Protected Species Observer

rms root-mean-square

ROV Remotely-Operated Underwater Vehicle Shell Shell Exploration & Production Company

USC United States Code

USCG United States Coast Guard

USFWS United States Fish and Wildlife Service

# 1.0 INTRODUCTION

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) administer regulations governing the issuance of Incidental Harassment Authorizations (IHAs) and Letters of Authorization (LOAs) permitting the incidental, but not intentional, take of marine mammals under certain circumstances. The regulations are codified in 50 Code of Federal Regulations (CFR) Part 216, Subpart I (Sections 216.101-216.108). The Marine Mammal Protection Act (MMPA) defines 'take' to mean "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal" (16 United States Code [USC] Chapter 31, Section 1362 (13)).

A Plan of Cooperation (POC) is a necessary requirement for receipt of a LOA and IHA to mitigate the potential for conflicts between the proposed activity and traditional subsistence activities (50 CFR §18.124(c)(4) and 50 CFR §216.104(a)(12)). The POC must identify the measures that will be taken to minimize any adverse effects on the availability of marine mammals for subsistence uses. In addition, both USFWS and NMFS require an applicant to communicate and consult with local subsistence communities concerning proposed activity, potential conflicts with subsistence activities, and means of resolving any such conflicts (50 CFR §18.128(d) and 50 CFR §216.104(a) (12) (i), (ii), (iv)).

Fairweather LLC (FWX) or Fairweather Science, LLC (FWS) if individually or collectively (Fairweather) plan to retrieve large seafloor anchors and associated gear that were deployed as part of Shell Exploration and Production Company's (Shell) exploratory drilling program at five locations in Kotzebue Sound, Chukchi Sea, and Beaufort Sea during the 2016 open water season (early July through October). The retrieval program will be funded by Shell but all aspects of the program will be operated by FWX or FWS individually or collectively by Fairweather.

The aspects of the retrieval program that have the potential to incidentally harass marine mammals are the underwater noise associated with vessels actively handling the anchors (due to use of thrusters to maintain position and unseat the anchors), the potential use of a side scan sonar to obtain high resolution imagery of the site before and after the retrieval operations, and the very unlikely event of ice management near Point Barrow. All activities will take place during the open water season and will avoid subsistence whale harvest activities.

This POC is intended to outline Fairweather's planned stakeholder engagement and to describe the measures Fairweather will take to minimize adverse effects that the proposed anchor handling program may have on the availability of marine mammals for subsistence use. Fairweather's IHA application and Marine Mammal Monitoring and Mitigation Plan (4MP) describe the monitoring and mitigation measures that will be implemented during the anchor retrieval program to prevent conflicts with substance activities.

Fairweather and its contractors shall comply with all applicable federal, state and local government requirements, including U.S. Coast Guard (USCG) requirements for safety, navigation and notice. FWS will also comply and sign the Conflict Avoidance Agreement (CAA) established in cooperation between industry and the Alaska Eskimo Whaling Commission (AEWC).

# 2.0 DESCRIPTION OF ACTIVITIES

As part of Shell's exploratory drilling program in 2012 and 2015, large anchors were deployed at five locations: 1) Good Hope Bay in Kotzebue Sound for barge moorings, 2) Burger A site in the Chukchi Sea for the arctic containment system moorings, 3) Burger V site in the Chukchi Sea for the M/V *Noble* 

Discoverer (Discoverer) drilling rig moorings, 4) Kakapo in the Chukchi Sea for a contingency location for the Discoverer drilling rig, and 5) Sivulliq site in the Beaufort Seas for the mobile offshore drilling unit (MODU) *Kulluk* (Kulluk) drilling rig moorings (Figure 1). The mooring systems at each site include anchors, chain, wire rope, clump weights, connecting gear, and float ropes. The anchors and all associated gear are scheduled for retrieval.

#### 2.1 DESCRIPTION OF MOORINGS

Each mooring site is configured differently based on the purpose of the mooring. These mooring systems are designed to hold drilling rigs or large barges in place by connecting the mooring line to the marine asset to anchor it to the seafloor. A mooring system consists of a mooring line that will include a combination of chain, wire rope, and synthetic fiber rope; connectors (shackles, links, swivels, etc.); and an anchoring point (drag anchor, clump weight, etc.). When Shell departed the Chukchi and Beaufort Sea, these mooring systems were left in place at the five locations shown in Figure 1. The arrays vary in size and configuration and will be retrieved with the use of three specialized Anchor Handling Towing Supply Vessels (AHTSV) and the oil spill response vessel (OSRV) *Nanuq* during the open water season of 2016.

# 2.2 DESCRIPTION OF VESSELS

These specialized AHTSs are designed specifically to handle large mooring systems. They have large winches for towing and anchor handling, large deck space to allow for storage of anchors and chain, lockers for chain, and have more power to increase the pull. While the vessel arrangements are still being finalized, the likely fleet of vessels will include four vessels: M/V Aiviq, M/V Ross Chouest, M/V Nanuq, and M/V Dino Chouest. All but the Dino Chouest have previously worked in the Arctic as part of Shell's exploration program. One of the AHTSVs (Dino Chouest) will carry a Remotely Operated Underwater Vehicle (ROV) specifically designed to manipulate float ropes. A description of each of the AHTSV is provided in Table 1. Photos of the vessels are provided in Figure 2.

Figure 1. 2016 Anchor Retrieval Locations.

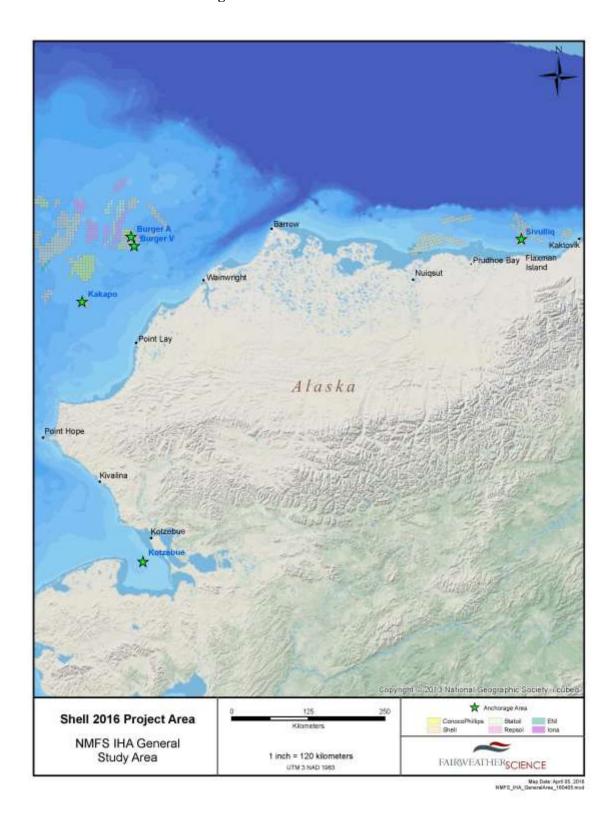




Figure 2. Photos of AHTSVs to be Used During Anchor Handling Program.

Table 1. Anchor Retrieval Proposed Vessels.

Vessel Name	Specification	Length	Width	Draft	Maximum Speed	Available Fuel Storage
M/V Aiviq	Anchor handling Ice Classed* Refueling Support	360 feet	80 feet	28 feet	15 knots	527,073 gallons
M/V Ross Chouest	Anchor handling	256 feet	54 feet	18 feet	12 knots	149,157 gallons
M/V Nanuq	Anchor handling Ice Classed* Refueling Support	301 feet	60 feet	21 feet	15 knots	323,065 gallons
M/V Dino Chouest	Anchor handling ROV	348 feet	72 feet	24.9 feet	15 knots	508,337 gallons

<sup>\*</sup>As discussed below, minimal ice management will occur. To the extent necessary, operated vessels may contact small ice floes (that do not have marine mammals visibly on them) in order to maximize survey efficiency. In other words, these vessels (M/V *Aiviq* and M/V *Nanuq*) do not need to avoid ice for safety reason.

# 2.3 DESCRIPTION OF RETRIEVAL PROGRAM

The goal of the retrieval program will be to complete operations efficiently and safely within one season, taking into consideration ice, weather, and subsistence harvest activities. Preliminary calculations indicate the vessels will have sufficient fuel onboard to have endurance to remain offshore with minimal fuel transfers at sea. The number of crew changes and vessel resupply will depend on the progress of the retrieval program, but, if necessary, will take place in Kotzebue, Wainwright, or Prudhoe Bay. Through the Olgoonik Fairweather LLC joint venture, FWS has provided crew change and logistic support for multiple vessels in all three locations since 2008. A small, flat-bottom crew change vessel is available at each location to transfer personnel, equipment, and groceries from shore to the AHTSV. Helicopters will not be used in this program, unless in an emergency situation. FWS will work closely with communities at each potential crew change location to avoid conflict with any subsistence activities, as we have successfully accomplished since 2008.

Vessels will mobilize from Dutch Harbor in late June to arrive in Kotzebue area by early July. Delmar (the owners of some of the mooring systems and onboard anchor handling technicians) and Fairweather have developed multiple scenarios to retrieve all of the systems within one season. Each AHTSV vessel is a different size and each will hold different amounts of equipment depending on deck space, storage reel space, chain locker space, storage location, and equipment type to meet stability requirements. Timing and movement of the four vessels is a complex planning exercise. It is likely that one or two vessel transits to Dutch Harbor to offload anchors will be required. The goal will be to arrive at Kotzebue Sound and retrieve these systems in early July.

FWS will work closely with the communities (Kotzebue, Kivalina, and Shishmaref) to ensure there are no conflicts with the beluga whale harvest. If subsistence harvest activities are taking place, we will not retrieve anchors until cleared (by the communities) to do so. The vessels will move into the Chukchi Sea to retrieve the Burger and Kakapo anchors, depending on ice presence. As soon as the passage to Barrow around Point Barrow is ice free and safe for passage to the Beaufort Sea, two of the four vessels will immediately transit to the Sivulliq site. Typically, this occurs in late July/early August. Retrieval operations will be completed and vessels out of the Beaufort prior to the August 25th commencement for the Nuiqsut/Kaktovik bowhead whale harvest. Once the Sivulliq anchors are retrieved, the two vessels will return to the Chukchi Sea to complete any remaining operations.

More details of the planned activities can be found in the IHA Application.

# 2.4 DESCRIPTION OF SIDE SCAN SONAR

The deployed locations of each anchor are known, but components of the mooring systems may have shifted over time and there may be significant marine vegetation growth. The ROV used to manipulate the float ropes is equipped with a camera to give the operators a visual of the equipment once onsite. However, only one vessel is equipped with an ROV; therefore, to facilitate the efficiency and safety of the retrieval process, Fairweather may obtain high resolution geo-referenced imagery using a side scan sonar prior to the beginning of retrieval operations at each site. This imagery will provide the anchor handlers with an accurate picture of exactly where equipment is located to allow safe and efficient retrieval. Fairweather may also survey each site after retrieval is complete to confirm all anchors and associated gear have been removed.

The side scan sonar survey will be conducted from the R/V Norseman II, operated by Olgoonik Fairweather, LLC. The Norseman II has operated in the Arctic for industry and research organizations since 2007. This vessel will operate independently from the AHTSVs with the goal of reaching the anchor sites prior to the AHTSVs' arrival. The side scan sonar will be towed over the anchor site array in a grid pattern sufficient to produce a mosaic of the entire site. Each survey is expected to last a period of one to three days. In the event that a multi-beam sonar is used it will be pole mounted of the side of the survey vessel whereas a side scan sonar would be towed. The imagery will be provided immediately to the vessel operators so they will be able to develop a detailed plan for the retrieval based on actual conditions of the equipment. The Norseman II will be in the Bering Strait region starting in early June conducting scientific research for other organizations. As soon as the ice allows, the Norseman II will transit to the Kotzebue Sound to collect the imagery and then up to the Chukchi Sea. As with the anchor handling vessels, the timing of transiting to the Beaufort Sea will depend on distribution of ice around Point Barrow.

# 3.0 MITIGATION MEASURES

The following mitigation measures, plans, and programs are integral to this POC and were developed through consultation with potentially affected subsistence groups, and communities. These measures, plans, and programs will be implemented by FWS during the 2016 anchor handling program. The mitigation measures described below allow FWS the ability to monitor and mitigate potential impacts to subsistence users and resources.

#### 3.1 SUBSISTENCE MEASURES

Fairweather will implement the following measures to ensure coordination of its activities with local subsistence users, in addition to minimizing the risk of impact to marine mammals and interfering with subsistence hunting.

#### 3.1.1 Aircraft Travel

No aircraft will be used at part of this program unless in an emergency and as such, mitigation measures are not included in this POC.

#### 3.1.2 Vessel Travel

- The AHTSVs will enter the Chukchi Sea through the Bering Strait on or after 1 July, minimizing effects on marine mammals that frequent open leads and minimizing effects on spring and early summer bowhead whale hunting.
- The transit route for the AHTSVs will avoid nearshore ecosystems as much as practicable and will include coordination through the North Slope Communication and Call Centers (Com Centers).
- Protected Species Observers (PSOs) will be aboard all AHTSVs and the *Norseman II*. PSO teams will
  consist of trained field biologist and Alaska Natives observers. An experienced field crew leader will
  be on every PSO team aboard each anchor handling vessel during the program. PSOs will help ensure
  that the vessel communicates with the Com Centers.
- Vessels will not operate within 0.5 miles (mi) (0.8 kilometer [km]) of walruses or polar bears when observed on ice or water.
- Vessels will not operate within 1.0 mi (1.6 km) of walruses or 0.5 mi (0.8 km) polar bears when observed on land.

- When within 900 feet (ft) (274 meter[m]) of whales, vessels will reduce speed, avoid separating members from a group and avoid multiple changes of direction.
- Vessels should take all reasonable precautions (i.e., reduce speed, change course heading) to maintain
  a minimum operational exclusion zone of 0.5 mi (805 m) around groups of 12 or more walruses in the
  water.
- Vessel speed will be reduced during inclement weather conditions in order to avoid collisions with marine mammals.
- FWS will communicate and coordinate with the Com Centers regarding all vessel transit.

# 3.1.3 Ice Management

The anchor retrieval program is located in an area characterized by active sea ice movement, ice scouring, and storm surges. In anticipation of potential ice hazards that may be encountered, we will utilize real-time ice and weather forecasting to identify conditions that could put operations at risk, allowing the vessels to modify their activities accordingly. These observations will be made by experienced ice and weather specialists whose sole duty is to provide information and provide advice on any ice-related threats. These observers and advisors will be based in Anchorage. This real-time ice and weather forecasting will be available to personnel for planning purposes and as a tool to alert the fleet of impending hazardous ice and weather conditions. Potential data sources for ice forecasting and tracking include:

- Potential unmanned aerial support operated by Tulugaq II LLC from vessels for ice scouting.
- Radarsat Data Synthetic Aperture Radar provides all-weather imagery of ice conditions with very high resolution.
- Moderate Resolution Imaging Spectroradiometer (MODIS) a satellite providing lower resolution visual and near infrared imagery.
- Other publically available remote sensing satellite data such as Visible Infrared Imaging Radiometer Suite, Oceansat-2 Scatterometer, and Advanced Very High Resolution Radiometer.
- Reports from Ice Specialists on the ice management vessel and anchor handler and from the Ice Observer on the vessels.
- Information from the NOAA ice centers and potentially the University of Colorado.

The proposed 2016 anchor handling fleet will consist of two ice-classed vessels. The only time ice management is likely for this project is around Point Barrow. The goal of the project is to transit into the Beaufort Sea as soon as ice conditions allow, which is typically in late July. If vessels transit into the area and ice moves in, they may be required to manage ice floes. Fairweather does not anticipate active ice management except for a few days near Point Barrow during the transit. Therefore, we have analyzed potential impacts of ice management for two days in the Barrow area.

### 3.2 MARINE MAMMAL MONITORING

FWS's vessel-based 4MP is designed to meet the requirements of the MMPA non-lethal, incidental take authorizations for marine mammals (MMPA authorizations) which FWS has requested from the NMFS and the USFWS. The objectives of the program are to: 1) ensure that disturbance to marine mammals and subsistence hunts is minimized, 2) that effects on marine mammals are documented, and 3) that data are collected on the occurrence and distribution of marine mammals in the project area. Further details are found in the 4MP.

#### 3.2.1 NMFS Acoustic Thresholds

Under current NMFS guidelines (e.g., NMFS 2000), acoustic thresholds for injury (exclusion zone) are defined as the distances within which received levels exceed 180 dB threshold for cetaceans and 190 dB threshold for pinnipeds. The 180 dB and 190 dB thresholds guidelines are also employed by USFWS for Pacific walrus and polar bear. Acoustic thresholds for harassment (safety zone) are defined as 160 dB for impulsive sounds and 120 dB for non-impulsive sounds for all marine mammals.

The distances to the acoustic thresholds are provided in Table 2 and the method for calculation provided in the text below:

Activity	Distance to NMFS Thresholds					
Activity	190 dB	180 dB	160 dB	120 dB		
Anchor Handling	3 m	10 m	100 m	22,104 m		
Side Scan Sonar	32 m	100 m	1000 m			
Ice Management	3 m	10 m	100 m	9,600 m		

Table 2. Summary of Distance to NMFS Thresholds.

#### Methods for calculation

- 1) The distances to the thresholds for anchor handling activity at each site were calculated using Method 2 as described in Section 6 in the IHA application, per NMFS instructions. This method uses the modeled ensonified area of 1,535 km² from the 2015 Shell IHA application (Shell 2015). The IHA application or associated 4MP does not provide the distances to the zones specifically for anchor handling activities, but assuming a simple spreading loss of 20 log R, the extrapolated distances to the thresholds are provided in Table 2. Because distances to the exclusion zones for anchor handling and ice management are so close to the vessel, we propose to use the 160 dB safety zone of 100 m as a monitoring zone for all marine mammals. Although both methods require extrapolation to the 120 dB, this is the worst-case estimate and therefore most conservative.
- 2) The distances to the thresholds for side scan sonar activity were calculated using Method 1 as described in Section 6, per NMFS instructions. Manufacturer specifications for single and multi-beam sonar provide a source level of 220 dB re 1 μPa at 1 m (Teledyne Benthos Geophysical 2008; Konsberg 2014). Assuming a simple spreading loss of 20 log R, the extrapolated distances are provided in **Error! Reference source not found.** Even though the side scan sonar is above 200 kHz and not typically regulated by NMFS (Shane Guan, personal communication), we will implement a shut down if a marine mammal enters the 180 dB exclusion zone of 100 m. We will monitor the 160 dB safety zone of 1000 m for behavioral responses.

#### 3.2.2 Shut Down/Power Down Procedures

Mitigation measures typically used in industry programs include powering or shutting down activities if a marine mammal is in or approaching an established zone (based on distances to 190 or 180 dB). For the anchor handling portion of the program, it is not feasible to implement a power down or shut down procedure. Each anchor weighs between 4,500 and 20,000 pounds; once the anchor has been connected to the winch and is being slowly hauled in, stopping or even slowing the retrieval process could have major safety consequences to the vessel. Accordingly, once the anchor is connected, we will not be able to stop operations if a marine mammal enters the safety zone.

FWS proposes the following mitigation and monitoring scenarios prior to and during actual **anchor retrieval** to reduce potential exposures of sound on marine mammals.

- When the vessel is positioned on-site, the PSO will 'clear' the area by observing the 160 dB safety zone (100 m) for 30 minutes; if no marine mammals are observed within those 30 minutes, anchor retrieval will commence.
- If a marine mammal(s) is observed within the 160 dB safety zone during the clearing, the PSO will continue to watch until the animal(s) is gone and has not returned for 15 minutes if the sighting was a pinniped, or 30 minutes if it was a cetacean.
- Once the PSO has cleared the area, anchor retrieval operations may commence.
- Should a marine mammal(s) be observed within the 160 dB safety zone during the retrieval operations, the PSO will monitor and carefully record any reactions observed. PSOs will also collect behavioral information on marine mammals beyond the safety zone.

FWS proposes the following mitigation and monitoring scenarios for the side scan sonar activity:

- Prior to starting the sonar activity, the PSO will 'clear' the area by observing the 180 dB exclusion zone (100 m) for 30 minutes; if no marine mammals are observed within those 30 minutes, sonar activity will commence.
- If a marine mammal(s) is observed within the 180 dB exclusion zone during the clearing, the PSO will continue to watch until the animal(s) is gone and has not returned for 15 minutes if the sighting was a pinniped, or 30 minutes if it was a cetacean.
- Once the PSO has cleared the area, sonar activity may commence.
- If an animal enters the 180 dB exclusion zone, sonar will be shut down immediately. Sonar activity will not resume until the marine mammal has cleared the exclusion zone. PSOs will also collect behavioral information on marine mammals beyond the exclusion zone.

# 3.2.3 Speed or Course Alteration

If a marine mammal is detected outside the 160 dB safety zone for anchor handling or ice management (100 m) or the 180 dB exclusion zone for sonar activities (100 m) and, based on its position and the relative motion, is likely to enter those zones, the vessel's speed and/or direct course may, when practical and safe, be changed. The marine mammal activities and movements relative to the vessels will be closely monitored to ensure that the marine mammal does not approach within either zone. If the mammal appears likely to enter the respective zone, further mitigative actions will be taken, i.e., either further course alterations or shut down in the case of the sonar.

# 4.0 AFFECTED SUBSISTENCE COMMUNITIES

Affected subsistence communities include: Barrow, Wainwright, Point Lay, Point Hope, and Kotzebue in the Chukchi Sea and Nuiqsut and Kaktovik in the Beaufort Sea. Belugas typically represent a much greater proportion of the subsistence harvest in Kotzebue, Point Lay, and Point Hope. Point Lay's primary beluga hunt occurs from mid-June through mid-July, but can sometimes continue into August if early success is not sufficient. Point Hope residents hunt beluga primarily in the lead system during the spring (late March to early June), but also in open water along the coastline in July and August. Belugas are harvested in spring mid-June through mid-July in Kotzebue, but the timing can vary based on beluga movement. Belugas are harvested in coastal waters near these villages, generally within a few miles from shore. In the Chukchi, the anchor retrieval sites are located more than 60 mi (97 km) offshore, therefore proposed anchor handling in

the project area would have no or minimal impacts on beluga hunts. The retrieval of anchors around Kotzebue is located nearshore and has the most potential for disturbance to beluga harvest. Communications with the Kotzebue Whaling Commission, AEWC, and Com Center (if established) will be imperative during operations in this area to avoid any conflict. Vessels will move offshore if we are not cleared to conduct activities.

FWS may meet with the following organizations or communities:

- The North Slope Borough (NSB) Department of Wildlife Management
- NSB Planning Commission
- AEWC
- Alaska Beluga Whale Committee
- Ice Seal Committee
- Kotzebue IRA
- Northwest Arctic Borough
- Kuukpik Corporation
- Wainwright Trilateral Committee
- Cully Corporation

#### 4.1 COMMUNITY MEETING SUMMARY

FWS will attend the AEWC meeting in Barrow from February 3-5 at which time FWS will be presenting the project components and developing mechanisms to work with the communities to present consistent and concise information regarding the planned anchor handling program as detailed in the 2016 anchor handling IHA application. Fairweather intends to sign the CAA. FWS will also attend timely NSB Planning Commission meetings in Barrow, Alaska.

#### 4.2 CONCLUSION AND CONTACTS

Fairweather is seeking alignment with stakeholders and, where appropriate and feasible, will incorporate the recommendations of stakeholders into project planning. As required by anticipated IHA and LOA stipulations, FWS will notify the communities of any changes in its planned activities. FWS respectfully submits that this POC to meet its obligations established by applicable USFWS and NMFS regulations (50 CFR 216.104, 50 CFR 18.124 and 128).

The following contact information is provided to facilitate communication

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